

acceptable, for the acknowledgment of Applicant's Claim for Priority and receipt of the certified copy of the priority document in the Official Action, and for the acknowledgment of Applicant's Information Disclosure Statements by return of the Forms PTO-1449.

Upon entry of the above amendments, claims 1-5 will have been amended and claims 6 and 7 will have been submitted for consideration. Claims 1-7 are currently pending. Applicant respectfully requests reconsideration of the outstanding rejections, and allowance of all the claims pending in the present application.

On page 2 of the Official Action, the Title was objected to as not descriptive. The title has been replaced with one more descriptive of the disclosed invention. It is therefore respectfully requested that this objection be withdrawn.

On page 2 of the Official Action, the drawings were objected to under 37 CFR 1.83(a) as not showing every feature of the claimed invention. Applicant respectfully traverses this objection for the reasons set forth below, and requests that it be withdrawn.

The Examiner has taken the position that the specific NA and refractive index set forth in claims 1 and 2 should be shown in the drawings. Applicant notes that the objective lens and the path of the light beam incident thereon is depicted throughout the drawings (note figures 2-4, 9, 14 and 19). However, Applicant submits that neither the NA, which is a physical characteristic of the objective lens, nor the refractive index, ✓

which is an optical characteristic of the glass material which the objective lens is formed of, are features which lend themselves to depiction in a figure. In other words, Applicant submits that the structural elements set forth in the claims are shown in the figures, and that the NA and refractive index constitute underlying characteristics of this structure which need not be shown. This would be analogous to requiring that a claimed weight, temperature or speed be depicted in the figures, which applicant submits is not intended, nor required, by 37 CFR 1.83(a).

The Examiner has also taken the position that the glass molding process described in claim 3 should be shown in the drawings. As discussed below in regard to the rejection under 35 U.S.C. § 112, second paragraph, claim 3 sets forth a product-by-process limitation. Applicant submits that the structural features of the product which is claimed (i.e., the lens) are shown in the drawings, and that glass molding is neither claimed, nor required to be depicted in the drawings.

For all of the reasons stated above, Applicant respectfully submits that the objection to the drawings under 37 CFR 1.83(a) is improper, and requests that it be withdrawn.

On pages 2 and 3 of the Official Action, claims 3 and 4 were rejected under 35 U.S.C. § 112, second paragraph. Applicant respectfully traverses this rejection. Applicant notes that claims 3 and 4 have been amended for clarification. In this regard,

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Applicant notes that the objected to phase has been removed from claim 4. Further,

✗ Applicant submits that claim 3 properly sets forth a product-by-process limitation. Note MPEP 2113 and 2173.05(p). Applicant submits that only structural features of the product (i.e., the lens) are claimed, not process or manufacturing steps, and that this is a proper dependent claim. Therefore, Applicant respectfully submits that the rejection under 35 U.S.C. § 112, second paragraph, is improper, and requests that it be withdrawn.

On page 3 of the Official Action, claim 1 was rejected under 35 U.S.C. § 102 as being anticipated by JP 8-315404. Applicant finds the statement of this rejection to be confusing in several respects. Initially, the rejection purports to be made under § 102(s), however, there is no section "s" under 35 U.S.C. § 102. Beyond this, it is not clear which of the Japanese documents submitted by Applicant the Examiner intended to reject the claims under.

The rejection lists JP 8-315404, which Applicant submitted in the Information Disclosure Statement filed on May 7, 2001, along with its corresponding U.S. Patent No. 5,764,613. However, in the body of the rejection the Examiner refers to the EP search report, which Applicant submitted in the Supplemental Information Disclosure Statement filed on July 11, 2001, and refers to "table 3 for instance wherein SIL has an NA greater than 0.7." The Japanese document listed and discussed in the EP search report is JP 2000-121930, and it appears that this is the document to which the Examiner's comments

are directed. It is therefore unclear which of the Japanese documents the Examiner intended to apply in this rejection, or the further rejections under 35 U.S.C. § 103 (a). Clarification is respectfully requested.

Applicant respectfully traverses this rejection under 35 U.S.C. § 102.

As an initial matter, Applicant submits that the Examiner's statement "As indicated in the EP report submitted by applicant, the JP document meets the limitations of claim 1" is erroneous on its face since there is no indication that the claims of the EP application are of the same scope as those of the present application.

Further, Applicant notes that JP 2000-121930, which appears to be intended by the Examiner, was published on April 28, 2000, and therefore is not a proper reference to be applied against the claims of the present application under any section of 35 U.S.C. § 102. In this regard, Applicant notes that the present application claims priority, under 35 U.S.C. § 119, of Japanese Application No. 2000-029879 filed on February 8, 2000.

Accordingly, because of Applicant's earlier foreign filing date, it is respectfully submitted that JP 2000-121930 does not provide an appropriate basis for a rejection under 35 U.S.C. § 102. For this reason alone, it is respectfully submitted that the rejection under JP 2000-121930 is improper and should be withdrawn. Applicant reserves the right to file a verified English translation of Japanese Application No. 2000-029879 if necessary. |||

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Moreover, each of the claims recites an objective lens which comprises *a single glass plano-convex lens*. Applicant submits that neither of the Japanese documents discloses such an objective lens.

Each of JP 8-315404 (which is discussed on page 2 of the present specification) and JP 2000-121930 disclose systems which combine double convex objective lenses (note element 6 in JP 8-315404 and element 5 in JP 2000-121930) and solid immersion lenses (note element 7 in JP 8-315404 and elements 1, 2 in JP 2000-121930). Although the SIL's are disclosed as plano-convex, it is clear that neither of these documents discloses *a single glass plano-convex objective lens*. As discussed on page 2 of the present application, while such multi-lens systems provide the SIL in addition to the objective lens in order to achieve an operable NA, there are inherent problems related to alignment, space requirements and fine actuator capabilities, which are not present with a single lens system. The present invention achieves the desired NA by providing *a single glass plano-convex objective lens*, thus avoiding the problems of such multi-lens systems.

Accordingly, Applicant submits that the rejection of claim 1 under 35 U.S.C. § 102 is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of allowance of this claim.

On page 3 of the Official Action, claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by GB 2168166. The Examiner relies on embodiments #63 and #64.

Applicant respectfully traverses this rejection under 35 U.S.C. § 102(b).

Applicants submit that objective lenses of embodiments #63 and #64 of GB 2168166 do not include a planar surface, and therefore are not *plano-convex* objective lenses, as required by all of the present claims. In this regard Applicant notes the lenses of embodiments #63 and #64 are described at page 16, lines 39 and 40 as "a positive *meniscus* lens as shown in Fig. 11", rather than *plano-convex*. Further, all of the radii of curvatures of these embodiments are listed as positive values in the tables on page 16, lines 10-30. Therefore, it is clear that these lenses do not include a planar surface, and therefore are not *plano-convex*.

Accordingly, Applicant submits that the rejection of claim 1 under 35 U.S.C. § 102(b) is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of allowance of this claim.

On page 3 of the Official Action, claims 1 and 2 were rejected under 35 U.S.C. § 102(b) as being anticipated by POWELL (U.S. Patent No. 6,002,483).

Applicant respectfully traverses this rejection under 35 U.S.C. § 102(b).

As an initial matter, Applicant submits that the Examiner's statement that "Powell is relied upon for the reasons stated in the EP search report" is erroneous on its face since there is no indication that the claims of the EP application are of the same scope as those

of the present application.

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Further, Applicant notes that POWELL does not disclose *an objective lens for an optical pick-up which converges a light beam onto a recording layer of an optical medium*, as recited in the present claims. In POWELL, a light beam from 70 is directed toward an article 79 without passing through lenses 82, 83 (note Fig. 7). Thereafter, reflected light passes through lenses 82, 83 on its way to detector 86. Therefore, it is clear that none of the lenses (82, 83 of Fig. 7; 60, 26 of Fig. 6; 51, 52 of Fig. 5) constitute *an objective lens for an optical pick-up which converges a light beam onto a recording layer of an optical medium*.

Further, while POWELL discloses that some of the above-noted lenses may be plano-convex, Applicant submits that none of these lenses constitute *a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the parallel light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7*, as presently recited in claim 1.

Accordingly, Applicant submits that the rejection of claims 1 and 2 under 35 U.S.C. § 102(b) is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of allowance of these claims.

On page 3 of the Official Action, claim 1 was rejected under 35 U.S.C. § 102(b) as being anticipated by the Melles Griot article "The Practical Application of Light" (hereinafter the Article).

Applicant respectfully traverses this rejection under 35 U.S.C. § 102(b).

While the Article discloses a plano-convex lens with an NA of at least 0.7, that does not mean that it is designed for use in an optical pick-up for converging a light beam onto a recording layer of an optical medium, nor that it has an aspherical surface.

Applicant notes that the Article does not disclose *an objective lens for an optical pick-up which converges a light beam onto a recording layer of an optical medium*, as recited in the present claims. Further, there is no disclosure in the Article that the convex surface of the lens is aspherical, which is necessary for the suppression of spherical aberration in present invention. Applicant submits that Article does not disclose *a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the parallel light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7*, as recited in claim 1.

Accordingly, Applicant submits that the rejection of claim 1 under 35 U.S.C. § 102 is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of allowance of this claim.

On pages 4 and 5 of the Official Action, claims 2-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over any of the references applied to claim 1, in view of LEE et al. (U.S. Patent No. 5,729,393).

Applicant respectfully traverses the rejections of claims 2-4 under 35 U.S.C. § 103(a). Applicant submits that dependent claims 2-4, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. Further, LEE et al. is another example of a system which provides an SIL (16) in addition to the objective lens (14), and thus can not possibly cure the deficiencies of the references applied to claim 1, as discussed above. Applicant respectfully requests reconsideration and withdrawal of these rejections, and an early indication of allowance of these claims.

On pages 5 of the Official Action, claim 5 was rejected under 35 U.S.C. § 103(a) as being unpatentable over any of the references applied to claim 1, in view of NAKAOKI et al. (U.S. Patent No. 5,978,320). Applicant finds the statement of this rejection to be confusing because it sets forth NAKAOKI et al. as a secondary reference, but then proceeds to discuss modifying the system of NAKAOKI et al. in view of the other references.

Nevertheless, Applicant respectfully traverses the rejections of claim 5 under 35 U.S.C. § 103(a).

While NAKAOKI et al. includes disclosure of a light source and a magnetic coil, it does not include the claimed objective lens, and thus can not possibly cure the deficiencies of the references applied to claim 1, as discussed above. Further, since such references themselves do teach the claimed objective lens, they can not possibly cure the lack of such an objective lens in NAKAOKI et al.

Applicant notes that NAKAOKI et al. achieves a high NA by the use of multiple lenses, in contrast to the *single glass plano-convex objective lens* of the present invention, which avoids the problems of such multi-lens systems which are discussed above. Applicant submits that neither NAKAOKI et al., nor any of the references applied to claim 1, include *an objective lens that converges the light beam emitted from said light source onto a recording layer of an optical medium, said objective lens comprising a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the light beam and a flat surface at the side of said optical medium, configured to maintain a numerical aperture of at least 0.7*, as recited in claim 5.

Accordingly, Applicant submits that the rejections of claim 5 under 35 U.S.C. § 103(a) is improper for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejections, and an early indication of allowance of this claim.

Applicant notes that newly presented claims 6 and 7 further defines the claimed objective lens, and is at least patentable due to its dependency from claim 1 for the reasons noted above. An early indication of allowance of this claim is respectfully requested.

SUMMARY AND CONCLUSION

Entry and consideration of the present amendment, reconsideration of the outstanding Official Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

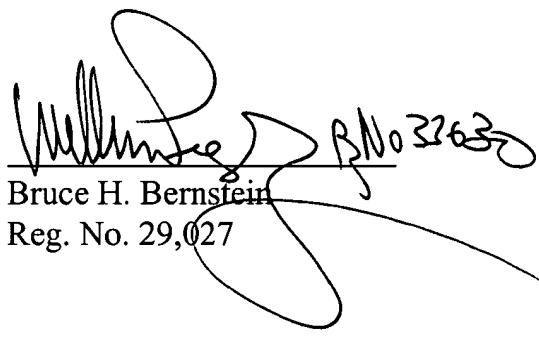
Applicant has made a sincere effort to place the present application in condition for allowance and believes that he has now done so.

The amendments to the claims that have been made in this amendment, which do not narrow the scope of the claims, and have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

P20277.A04

Should there be any questions or comments, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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MARKED UP COPY OF AMENDED CLAIMS

1. (Once Amended) An objective lens for an optical pick-up that converges a parallel light beam incident thereon onto a recording layer of an optical medium, said objective lens comprising:

a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the parallel light beam and a flat surface at the side of said optical medium, [thereby keeping] configured to maintain a numerical aperture [not less than] of at least 0.7.

2. (Once Amended) The objective lens according to claim 1, wherein the refractive index of said glass is [not smaller than] at least 1.6.

3. (Once Amended) The objective lens according to claim 1, wherein said plano-convex lens is [made through] produced by glass molding [process] with a pair of dies that correspond to said convex and flat surfaces, respectively.

4. (Once Amended) The objective lens according to claim 1, wherein said plano-convex lens is provided with an outer flange formed around the edge thereof [to be held by a fine actuator that drives said plano-convex lens in the optical axis direction].

5. (Once Amended) An optical pickup, comprising:

a light source that emits a light beam;

an objective lens that converges [said] the light beam emitted from said light source onto a recording layer of an optical medium, said objective lens comprising a single glass plano-convex lens having a rotationally symmetrical convex aspherical surface at the incident side of the [parallel] light beam and a flat surface at the side of said optical medium, [thereby keeping] configured to maintain a numerical aperture [not less than] of at least 0.7; and

a magnetic coil for applying a magnetic field to said optical medium, said magnetic coil [is] being arranged on said flat surface of said objective lens.